

NCEM-8 Consortium series is open for new members

Novel Concepts *for* Enhanced Materials (NCEM) Consortium

The NCEM consortium provides an opportunity to engage with leading companies in the supply chain and also with leading world class experts in a commercialisation pathfinder programme for a small fraction of time and total costs of alternatives such as consultancy, meetings, workshops and conferences. It provides an opportunity to develop materials commercialisation strategy through an active technology watch programme with a unique insight into state-of-the art of technologies and key player strategies and also to secure IP and develop technologies through participations in collaborative R&D programmes and direct commercialisation partnerships with the NCEM members and presenting organisations.

The 1st NCEM consortium (NCEM-1) launched in April 2012 by the **Centre for Business Innovation Ltd** (www.cfbi.com), was focused on **nano-carbon materials (Nano-Carbon Enhanced Materials)**. In the following years the consortium interests broaden to include other nanomaterials and novel concepts for enhanced materials in many different applications. The aim of the NCEM consortium was to provide the consortium members a unique insight, facilitate the commercial uptake and bring together potential users with a shared interest to address commercialisation challenges. The consortium leader **Dr Bojan Boskovic**, from **Cambridge Nanomaterials Technology Ltd** (www.cnt-ltd.co.uk), is an expert in nanomaterials commercialisation. After 7 successful NCEM consortium series (NCEM-1, NCEM-2, NCEM-3, NCEM-4, NCEM-5, NCEM-6 and NCEM-7), with 5 meetings each series and total of 35 meetings in Europe and USA the NCEM consortium is now in the 8th series (NCEM-8). The current **NCEM-8 consortium series is open for new members.**

The NCEM-1, NCEM-2, NCEM-3, NCEM-4, NCEM-5, NCEM-6, NCEM-7 consortium members: University of Cambridge (UK); Nokia Research Centre (UK); ST Microelectronics (Italy); International Copper Association (USA); Nexans (France); Bosch (Germany); Thales (UK), Henkel (Germany), Codelco (Chile), National Grid (UK), Trinity College Dublin (Ireland), Arup (UK), Statnett (Norway), Schneider Electric (France), RTE (France), AIRBUS Defense & Space (UK), GE (USA), Bose (USA), LML Products Ltd (UK), Rolls-Royce (UK), ArcelorMittal (Spain), NISSAN (UK), Whirlpool (USA), Johnson Matthey (UK), Tecnalia (Spain) and Prysmian Group (Italy).

Malcolm Burwell from International Copper Association, USA: ***"We all felt that the value obtained from the single meeting that we just had justified the yearly fees on its own."***



The use of nanomaterials, such as carbon nanotubes and graphene are a rapidly evolving field and this is an opportunity to influence where and how fast it goes, and to facilitate their commercialisation. The mission of the consortium is to facilitate the commercial uptake of technologies based on advanced materials such as graphene and carbon nanotubes, and to bring together potential users from **batteries, energy transmission, solar and wind power, carbon capture, electronics, aerospace, automotive, biomedical and 3D printing industries**, with a shared interest in understanding the challenges and opportunities of novel concepts materials technologies.

Over 100 organisations from around 17 countries have participated providing delegates and speakers in the 35 meetings of the first 7 series of the NCEM consortium (see some of the speaker organisation logos below).

NCEM-1, 2, 3, 4, 5, 6 & 7 PRESENTING ORGANISATIONS



Dr Kyle Kissel, Technology Director from NanoRidge, Houston, Texas, USA:

"I believe that consortia like this are a critical step towards bridging the gap between extraordinary science and product commercialization. We feel privileged to be invited to speak to a group that is interested in DOING something as opposed to just TALKING about something. The connections we created during the two days of interactions will be crucial for the success of our products and our company."

The NCEM consortium meets together 5 times per year, usually at one of its members' sites or hosted at a leading research institution. World class experts are invited to join and participate at the specific meetings related to their field of expertise.

The NCEM-1 consortium meetings were held in Cambridge (England), Edinburgh (Scotland), Brussels (Belgium), Stuttgart (Germany) and Dublin (Ireland). The NCEM-2 consortium meetings were in Cambridge (England), San Sebastian (Spain), London (England), Dublin (Ireland) and Boston (USA). The NCEM-3 consortium meetings were in Grenoble (France), Stevenage (UK), Brussels (Belgium), Paris (France) and Cambridge (UK). The NCEM-4 meetings were in Cambridge (UK), Houston (USA), Genoa (Italy), Cambridge (UK) and Leuven (Belgium). The NCEM-5 meetings were in Manchester (UK), Madrid (Spain), Brussels (Belgium), Cambridge (UK), and San Sebastian (Spain). The NCEM-6 meetings were in Milan (Italy), Freising (Germany), Cambridge (UK), Barcelona (Spain) and Thun (Switzerland). The NCEM-7 meetings have been in Cambridge (UK), Brussels (Belgium) and held online (due to the pandemic situation).

The NCEM meetings are often hosted at one of its members' sites at a leading research institution **with the tour of laboratories:** MIT, Boston (NCEM-2.5), **University of Cambridge**, Cambridge (NCEM-4.1), **Fraunhofer IPA**, Stuttgart (NCEM-1.4), **CRANN** Trinity College Dublin, Dublin (NCEM-1.5 & NCEM-2.4), **AIRBUS** Defence & Space, Stevenage (NCEM-3.2), **Schneider Electric**, Grenoble (NCEM-3.1), **Graphenea**, San Sebastian (NCEM-2.2), **Cambridge Nanosystems**, Cambridge (NCEM-3.5), **Rice University**, Houston (NCEM-4.2) and **IIT**, Genoa (NCEM-4.3), **The Joint Institute for Innovation Policy** and **Nanocyl** Brussels (NCEM-5.3), **Tecnia**, San Sebastian (NCEM-5.5). **Prysmian Group**, Milan (NCEM-6.1), **Fraunhofer IVV**, Freising (NCEM-6.2), **LEITAT**, Spain (NCEM-6.4) and **EMPA**, Thun (NCEM-6.5).

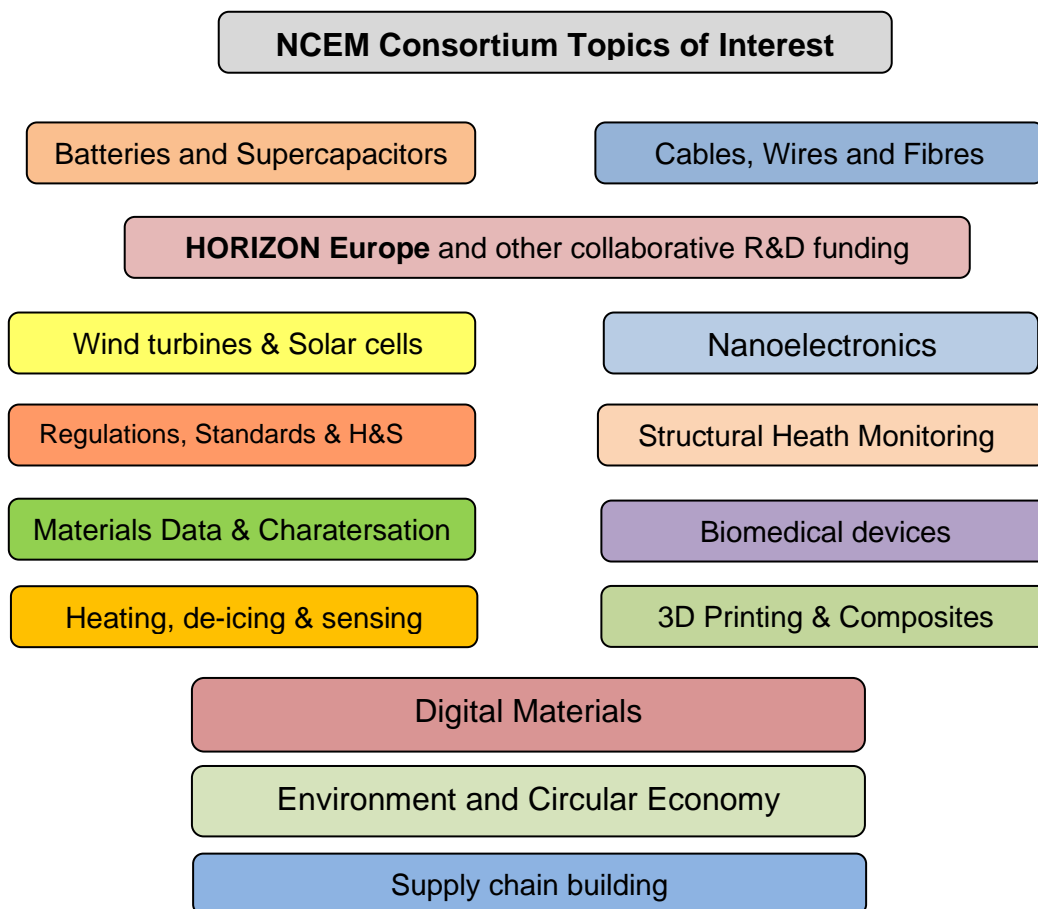


NCEM Consortium Meetings, Lab Visits and Dinners

The consortium is led by ‘big industry’ and it is commercially focused. It is interacting with best quality government research organisations and innovative SMEs. Members are drawn from across all European countries and beyond – this is not a national/regional/EU subsidised consortium.

The NCEM consortium is controlled by its members who are suggesting the topics of interest and additional members. This is an interactive process, with members explicitly discussing the scope, focus and location of future meetings at the conclusion of each meeting.

The themes and topics of interest to the NCEM consortium are the result of discussions with the members. However, this would remain an open area for constant feedback from our members.



Cambridge Nanomaterials Technology Ltd has been involved in many EU and UK Government funded projects ranging from energy to biomedical applications of carbon nanomaterials. The **UltraWire project** was the **first project** that has been supported by the NCEM consortium and its members have participated as partners on the project and members on the Industrial Advisory Board. The project **was on the BBC News** Click programme. The **latest project** we are working on is the **AM4BAT**, a **Horizon Europe Project** (Ref: 101069756), which has the objective to reach a **high-performance battery for electric vehicles applications**.

Following successful NCEM-1.3 meeting in Brussels, the consortium submitted EC FP7 UltraWire project proposal in December 2012 that included 4 consortium members and 2 of organisations that provided speakers at the consortium meetings. The UltraWire project was granted €3.3M by the EC and it started on 1st October 2013. Since the UltraWire project ended in 2016, the UltraWire community continued with annual in-person meetings and exhibitions (www.ultrawire.eu).

In more than 15 projects funded by the European Commission and the UK Government where Cambridge Nanomaterials Technology Ltd have been involved, the NCEM members have been invited and involved as partners on the project or members on the Advisory Board or as participants at special project related workshops.

Cambridge Nanomaterials Technology Ltd has been **building community virtual exhibition platforms** as a result of **the COVID-19 pandemic** travel and social distancing restrictions and continued following the pandemic restrictions ending in order to provide additional and complementary tool for community building and support. Currently we have 10 platforms under umbrella of the central nanomaterials nanoMAT platform (www.nanoMATexpo.net). Platforms are directly related to nanomaterials community such as GRAPHENEXPO platform (www.graphenexpo.net), energy applications including two platforms on renewable energy Solar Power (www.SolarPowerExpo.net) and Wind Power (www.WindPowerExpo.net) and Carbon Capture and Utilisation platform (www.carboncaptureexpo.net). Further platforms have been built supported by various government projects related to topics such as materials charatersation, circular economy, medical devices, and regenerative medicine applications. All of these platforms are available to the NCEM. Platforms related to batteries, packaging, nanoelectronics and 3D printing for biomedical applications are being developed in various ongoing projects or communities developed related to this applications are incorporated into the existing platforms.



NCEM related graphene virtual exhibition platform

The NCEM members have access to information related to all community development and virtual exhibition platforms and an opportunity to participate at the relevant in-person and online community meetings. They could also have a virtual exhibition stand at the community expo platform of their choice.

The **Novel Concepts for Enhanced Materials Consortium (NCEM)** has been running for 7 years and it has been used as an incubator of the **Advanced Materials for Additive Manufacturing Consortium (AMAM)**. **The NCEM consortium members are given of a membership of the AMAM consortium for free.**

The NCEM consortium meetings attracted some of the leading academic, industrial and government speakers working in the field of nano-carbon materials:

- **Prof Alan Windle**, Department of Materials Science and Metallurgy, **University of Cambridge**, UK
- **Dr. Krzysztof Koziol**, Department of Materials Science and Metallurgy, **University of Cambridge**, UK
- **Prof John Hart**, Department of Mechanical Engineering, **MIT**, USA
- **Prof Brian Wardle**, Department of Aeronautics and Astronautics, **MIT**, USA
- **Christos Tokamanis**, Head of Nano Sciences and Technologies, **European Commission**, Belgium
- **Dr David R. Forrest**, **U.S. Department of Energy**, USA
- **Dr Meyya Meyyappan**, **NASA Ames Research Center**, USA

- **Dr Jean Dijon**, Research Director at **CEA - LITEN**, Grenoble, France
- **Dr Zoe Webster**, Head of Technology, **Technology Strategy Board**, UK
- **Dr Steve Hankin** and **Dr Craig Poland**, **Institute of Occupational Medicine**, Edinburgh, UK
- **Dr Anna Gergely**, Director, EHS Regulatory, **Steptoe & Johnson LLP**, Belgium
- **Dr Kyle Kissell**, Director of Technology Development, **NanoRidge**, USA
- **Dr David Arthur**, CEO, **SWeNT**, USA
- **Jesus de la Fuente**, CEO, **Graphenea**, Spain
- **Dr Andy Goodwin**, **Thomas Swan & Co**, UK
- **Dr Karl Coleman**, CTO, **Applied Graphene Materials**, UK
- **Francis Massin**, CEO, **Nanocyl**, Belgium
- **Peter Antoinette**, CEO, **Nanocomp Technologies**, USA
- **Dr Elena Polyakova**, CEO, **Graphene Laboratories**, USA
- **Dr Erick Thostenson**, **University of Delaware**, USA
- **Jose Cubillo Capuz**, Head of Advanced Materials Group, **ACCIONA** R&D, Spain
- **Chris Ward**, Head of Space R&D UK, **AIRBUS** Defense & Space, UK
- **Dr Paolo Bondavalli**, Head of Nanomaterial Topic Team, **Thales**, France
- **Dr Alfred A. Zinn**, **Lockheed Martin** Space Systems Company, USA
- **Dr Julio Gomez**, CEO, **Avanzare**, Spain
- **Dr Terry Holesinger**, Los Alamos National Laboratory, USA
- **Prof Ian Kinloch**, Professor of Material Science, University of Manchester, UK
- **Prof. Rodolfo Miranda**, Director IMDEA-Nanoscience, Spain
- **Roberto Suárez**, Global R&D, ArcelorMittal, Spain
- **Dr. Balu Balachandran**, Argonne National Laboratory, USA
- **Neill Ricketts**, Chief Executive Officer, Versarien, UK.
- **Prof. Sir Colin Humphreys CBE FEng FRS**, Professor of Materials Science, **Queen Mary University of London**, UK
- **Ray Gibbs**, Chief Executive, **Haydale Graphene Industries PLC**, UK

The **NCEM consortium** is led by **Dr Bojan Boskovic**, CEO of the Cambridge Nanomaterials Technology (CNT) Ltd (www.CNT-Ltd.co.uk), a consultancy company specialising in nanomaterials, and CNT Innovation (www.CNT-Innovation.com), a sister company based in Brussels. He has more than 20 years of hands-on experience with carbon nanomaterials and composites from industry and academia in the UK and Europe. Previously, he was a R&D Manager at Nanocyl, one of the leading carbon nanotube manufacturing companies in Europe, a Principal Engineer-Carbon Scientist at Meggitt Aircraft Braking Systems, a Research Associate at the University of Cambridge, and a Senior Specialist at Morgan Crucible PLC. His carbon nanomaterials related work has been patented and published in leading scientific journals including Nature Materials. He was a member of the Steering and Review Group for the Mini-IGT in Nanotechnology that advised the UK Government on the first nanotechnology strategy policy document. He is also working as an advisor for the European Commission (EC) on engineering and upscaling clustering and he has experience in management of exploitation and dissemination related activities in European collaborative R&D FP7, Horizon 2020 and Horizon Europe projects and in UK Government Innovate UK funded projects.



For further details about membership package for large corporations, SMEs and research institutions and information how to join the consortium please contact Dr Bojan Boskovic, Leader of the NCEM consortium (Bojan.Boskovic@cfbi.com) and CEO of CNT Ltd (Bojan.Boskovic@CNT-Ltd.co.uk).